Executive Summary

The Central Plains irrigation scheme (the Scheme) supplies water to a command area of approximately 71,000 hectares between the Waimakariri and Rakaia rivers. The initial stage of the Scheme (Stage 1) of the commenced operations in 2015, with the final stage (Stage 2) being commissioned in October 2018.

Stage 1 of the Scheme covers an area of approximately 30,300 hectares between the Rakaia and Selwyn rivers, approximately 22,500 hectares of which is irrigated using CPW water. Stage 1 incorporates a 17km long headrace canal to supply water from the Rakaia River intake to 133 farm turnouts via a 130 km distribution network comprising pressurised underground pipes. Stage 2 of the CPW Scheme covers an area of approximately 32,000 hectares between the Selwyn and Waimakariri Rivers, 18,200 hectares of which is irrigated using CPW water. Stage 2 extends from the end of the Stage 1 headrace canal and supplies 135 farm turnouts via a pressurised distribution network approximately 200 kilometres long. The 7,000 ha Sheffield Scheme is a stand-alone project along the northern margin of the Central Plains area that commenced operations in November 2017 utilising water from the Kowai and Waimakariri Rivers in combination with a 2 million m^3 storage pond constructed near Springfield. Approximately 4,200 hectares of the Sheffield Scheme area is irrigated using CPW water.

Cumulative rainfall during the 1 September 2021 to 23 May 2022 irrigation season was generally between 10 to 20 percent above average across the Central Plains area. However, this rainfall was unevenly distributed through the season with large rainfall events occurring in mid-December 2021 and early February 2022. These rainfall events moderated accumulated soil moisture deficits during the summer and autumn period, reducing cumulative irrigation demand over 2021-22 irrigation season. Following wetter than normal conditions during winter 2021, groundwater levels and surface water flows were generally above average during the early part of the season. Following the December 2021 and February rainfall events, this recovery was maintained through the remainder of the year.

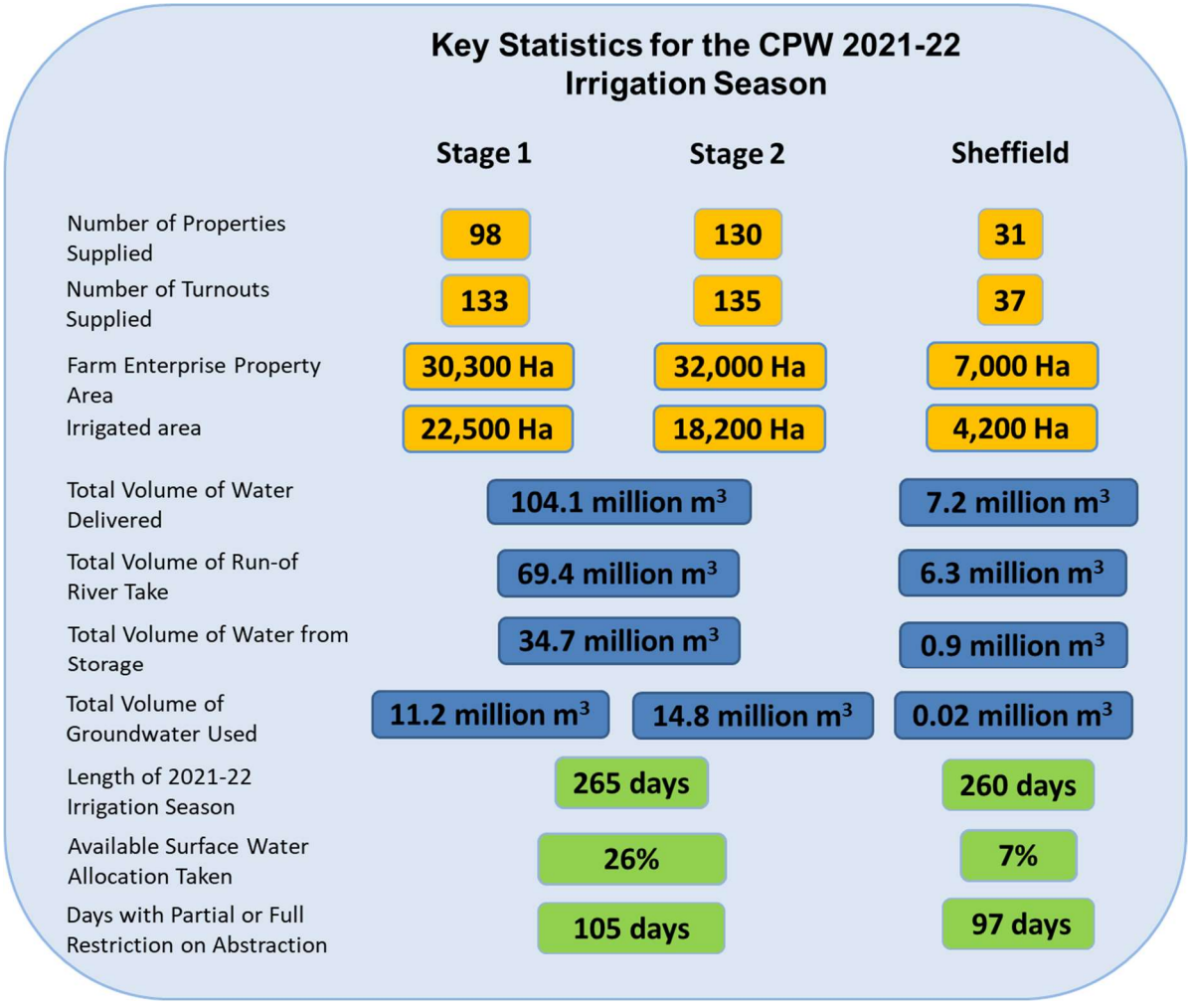
During the 2021-22 season the CPW scheme supplied 111.3 million m^3 of water to 259 shareholder properties. A combined total of 104.1 million m^3 of water was supplied to 228 properties in the Stage 1 and Stage 2 areas of which 69.4 million m^3 (66.7%) was sourced from run-of-river abstraction from the Rakaia River, with an additional 34.7 million m^3 (33%) of stored water sourced from Lake Coleridge. A total volume of 7.2 million m^3 was supplied to 31 properties in the Sheffield Scheme area during 2021-22, comprising 5.3 million m^3 (77%) pumped from the Waimakariri River and 1.6 million m^3 (23%) gravity fed from the Kowai River.

During the 2021-22 season direct run-of-river abstraction by the Scheme totalled 26 and 7 percent of the volume potentially available under resource consents held by CPW for abstraction from the Rakaia and Waimakariri Rivers respectively. Groundwater usage by CPW shareholders during 2021-22 totalled 13% of the total volume authorised by existing water permits across the Scheme area.

Water quality monitoring results recorded by the CPW monitoring programme during the 2021-22 year show surface water quality, groundwater quality and lake water quality trigger levels established

for the CPW Scheme[1] were exceeded at a number of monitoring sites located both up-stream, within and down-stream of the CPW Scheme area. The recorded trigger level exceedances are either within the historical range and/or consistent with background trends observed prior to commencement of CPW operations. Although influenced by medium-term variation in climate and land use, historical increasing trends in Nitrate-Nitrogen appear to have levelled-off in several lowland streams. Similarly, in-Scheme groundwater levels have recovered significantly compared to those prior to commissioning of the Scheme, particularly in the Stage 1 area where the magnitude of seasonal variation has decreased in response to the substitution of deep groundwater abstraction with water supplied by CPW Scheme.

Implementation of Farm Environment Plans (FEPs) for all CPW Shareholder properties, combined with ongoing improvements in farm management practices, has resulted in significant reductions in nutrient losses across the Scheme. Based on farm nutrient budgets, 2021-22 nutrient losses were approximately 22% below the 2017 baseline across properties in the CPW Scheme, exceeding the 2022 nutrient reduction target for agricultural land use in the Selwyn-Te Waihora zone specified in the Land and Water Regional Plan (LWRP).



[1] These trigger levels are consistent with equivalent environmental limits established in the Canterbury Land and Water Regional Plan